Salton Sea
SPECIES CONSERVATION HABITAT PROJECT

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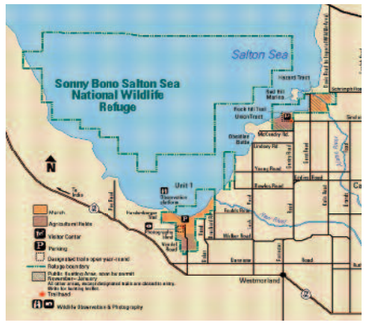
Coordination with Sonny Bono National Wildlife Refuge

A portion of the area that is under consideration for the Species Conservation Habitat (SCH) Project ponds is within the boundaries of the Sonny Bono Salton Sea National Wildlife Refuge (NWR) which is managed by the United States Fish and Wildlife Service (USFWS).

The State's SCH Team is working closely with NWR staff while developing the SCH Project. The NWR is a cooperating agency under the National Environmental Policy Act (NEPA) and is providing input into the environmental review process.

A number of meetings have occurred between the State and Federal officials to share information about the SCH Project and future USFWS projects in the same



area, to develop strategies to avoid conflicting with each other's plans, and to explore ways to develop synergy between the projects where feasible.

The NWR plans on creating approximately 700 acres of shallow water habitat at Red Hill Bay, an area that was exposed by receding Sea elevation and has been historically used by shorebirds and waterfowl. Plans for this habitat are still in development.

Based on this cooperative process, the State has redesigned the SCH Project to avoid the Red Hill Bay area and any potential conflicts with the NWR plans. Additionally, the NWR and State agencies are exploring the potential for sharing infrastructure such as pumps, water diversion facilities and transmission lines and are now coordinating on other future projects.

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SCH Engineering Challenges and Alternatives Development

The construction of the Species Conservation Habitat (SCH) ponds is anticipated to be similar to habitat restoration projects completed at the Great Salt Lake and San Francisco Bay.

Earthwork will be required for all alternatives to construct berms, islands, working pads, channels, swales and ditches, and re-contouring of existing topography to achieve the desired depth profiles. A variety of methods is anticipated to be required due to the wide variability of site conditions found within the potential project sites. Both land based and floating earthmoving equipment will likely be utilized to achieve the best production rate. Low ground pressure equipment including excavators, dump trucks, scrapers, and dozers, and floating equipment such as barge mounted excavation rigs and dredges will all be employed to build the pond infrastructure.

Numerous engineering challenges affect the design and construction of the SCH ponds. The SCH Project Team is working through each of these challenges with the help of experts from the University of California, Scripps Institution of Oceanography, Hultgren-Tillis Engineers, Ducks Unlimited, and local stakeholders. The result of this work has produced several SCH project alternatives at the New and Alamo Rivers that are intended to be durable and cost-effective. Major project challenges include:

- **Soil character:** Soil samples taken from the proposed project sites illuminate several challenges. Soils present on the playa are derived from a variety of sources such as historic and recent river sediments and sand as well as detritus from aquatic organisms (algae and barnacles). This variability makes it difficult to predict site specific soil characteristics necessary for berm design. Dispersive soil conditions exist thereby triggering the potential need to expand the footprint of the pond berms. Specialized equipment and techniques are required to work in the soft river delta sediments found at the proposed project sites. These issues are compounded when working in wet, saline environments.
- **Seismic performance:** With several seismic sources nearby, most notably the San Andreas Fault, loose sandy deposits may liquefy during an earthquake, which could lead to berm failure. However, the consequence of berm failure to property damage and injury or death is considered low.
- **Water table:** The high water table underlying the proposed project sites

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The Environmental Impact Analysis is Coming – EIS/EIR Update

Developing the alternatives for the Species Conservation Habitat (SCH) Project has proven to be a complicated process that has required a number of special studies and significant engineering. These alternatives will be the basis of the Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR).

It is envisioned that the draft EIS/EIR will be released in either the late spring or early summer of this year. A public comment period will occur after the release and the draft EIS/EIR will be available on the Department of Water Resources website with a link to provide comments. Additionally, a number of public meetings will be held in and around the Salton Sea region to receive comments on the EIS/EIR.

SCH Engineering Challenges and Alternatives Development (Continued from Page 1)

makes it difficult to operate heavy equipment and achieve proper compaction during project construction.

- **Access:** Pond access is critical to project maintenance, monitoring, and operation. Wet roads are nearly impassable because of the clay soils. Project berms will likely be the primary means to access all areas of the ponds. Berm design will address the need for all-weather road surfaces.
- **Erosion:** Earthen berms are highly vulnerable to the erosive forces of wind-generated waves. Berm failure would lead to pond failure and the loss of important habitat. Project berms will have to be protected. Project designs will incorporate various approaches to erosion control.
- **Water supply and quality:** Water supply and water quality are fundamental to producing fish in the SCH ponds. Tilapia most readily survive and multiply in salty water. Project alternatives will manipulate the volume, salinity, and retention time of pond water to determine which operation scenarios best support tilapia populations. Each SCH alternative will incorporate various infrastructure to reduce sediment input, deliver blended water to the ponds, manage water quality, and manage pond drainage.
- **Power:** SCH will require some pumping facilities to allow project managers to mix fresh river water and salty sea water. By necessity, pumps may be located far from existing power sources. Ongoing coordination with IID is helping to address this challenge.

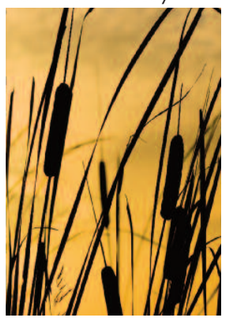
While designing and constructing habitat restoration projects is not a new undertaking, many of the unique circumstances in the Salton Sea do make this effort challenging. As we have noted everything from water supply to seismic issues have required the SCH Project team to look at all aspects of this project to ensure it operates as effectively as possible. The draft EIS/EIR will outline these alternatives in detail.

Special Studies Support the Development of SCH Alternatives

The SCH Team has been working with scientists from UC Riverside, Scripps, and UC Berkely on special studies related to fish survival, pollutants, and toxicity at the sites being considered for the SCH Project, and the physical and chemical characteristics of the sites that relate to construction and operations. The findings to date are summarized below.

- **Fish:** Several different strains of tilapia exist in the Salton Sea region. Survival of different strains was evaluated under different water temperatures and salinity levels. The tilapia currently in the Salton Sea survived best in cold conditions, but other strains did well in other conditions. A mixture of fish strains may be the best approach.

- **Pollution and Toxicity:** Selenium, trace metals, pesticides, and other pollutants are present in the water and soils of the potential SCH sites. Selenium can move into the food web and affect breeding birds. One-third of the selenium sediment samples reached 'levels of concern,' but none were at toxic levels. Selenium from river water, particularly the Alamo River, is of greater concern than water from the Salton Sea. One study used U.S. Environmental Protection Agency standards to assess potential ecological risks from the bioaccumulation of selenium in the food web. The study found that future selenium levels could affect some breeding birds, but this could be managed at the SCH Project without treatment. However, another team is evaluating the feasibility and effectiveness of biological treatment options, such as using constructed wetlands. Pesticides are another pollutant of interest. The highest levels of pesticides, primarily DDE, were found in sediments near the mouths of the New and Alamo rivers.



- **Physical / Chemical impacts on operations and construction:** The design, construction, and operation of the SCH ponds must accommodate and balance many factors. Suitable temperature and oxygen levels are important for fish survival. A modeling study indicated that pond size affects water quality and mixing. Deeper ponds provide more habitat, but oxygen may be depleted at the bottom. Dips in oxygen would occur in early spring and fall, and cold spells would be stressful for tilapia. Mosquitoes could grow in the ponds, but numbers would be reduced given the salinity, lack of vegetation, and wind disturbance. Operators would need to add water to balance salinity and mixing in order to maintain conditions for survival while minimizing risks from contaminants and mosquitoes.

  Geotechnical studies suggest that on-site soils may be used for berm construction, but specialized construction techniques would be required.

General Conclusions

The special studies were designed to answer important questions about fish survival, food web impacts, levels of pollutants, and potential for toxicity. They provide a glimpse into the current status of the Salton Sea at the alternative sites, and insights for planning and management:

- Some fish are better suited than others under specific salinity and temperature conditions; therefore, a mixture of fish strains may be the best approach;
- The hydrology, water quality, chemistry, and physical characteristics at the proposed sites are complex, and the studies suggest pond designs that may be better than others, with some specific operational criteria needed for success;
- Selenium could be a problem for some breeding birds, but impacts can be minimized by keeping salinity levels higher (using less river water);
- Other toxics and pollutants need to be a part of the operations planning.

Scripps Study Focuses on Geotechnicial Issues

The University of California, Scripps Institution of Oceanography, has completed a geophysical study of the Salton Sea which provides information for the design and construction of structural elements associated with SCH and for potential future planning activities. This work will improve the understanding of fault locations and earthquake recurrence intervals, and potential rupture directivity, which are important inputs into hazard assessment for design of structural elements. In addition, sediment classification and distribution data, bathymetric data, and other information collected from this work will improve understanding of the characteristics of the sea floor, locations of sediments which could potentially become emissive as the Sea recedes, deposition patterns of sediments potentially laden with toxic compounds, and potential need for excavation for structures associated with restoration activities. As part of this effort, Scripps is also performing ground-based LIDAR in the southern end of the Sea by the New and Alamo river sites. This information will be used to define topography for site layout and design. Scripps is currently preparing a report summarizing the results of all their surveys and findings.

New SCH Team Members

California Fish and Game's David Elms – A Native of Southern California's Desert Region

While David Elms may be the newest member of the California Department of Fish and Game's SCH Project Team, he is no newcomer to the Southern California desert region and its' issues. A native of Blythe, David serves in the position of Deputy Regional Manager for Fish and Game's Inland Deserts Region 6 which serves Imperial, Inyo, Mono, Riverside and San Bernardino counties.

David Elms is assuming the role of Fish and Game's day to day manager for Salton Sea issues and specifically for the Species Conservation Habitat Project. This position became available when Kim Nicol was promoted to the position of Regional Manager for Region 6. While Kim remains very much involved in the Salton Sea, the demands of her new position required her to hand off some of the Salton Sea responsibilities.

David has capable and experienced hands to take on these many responsibilities. A graduate of California State University, Fresno, David spent nine years as an Agriculture Standards Investigator for the Riverside County Agricultural Commission's office. He then spent six years as a Senior Agricultural Biologist for the California Department of Food and Agriculture where he supervised a large biological control insectary for the Pierce's Disease Control Program in Bakersfield.

In 2008 David Elms joined the Department of Fish and Game's Inland Desert Region as a Deputy Regional Manager. In addition to the Salton Sea, David is tasked with managing staff related to Renewable Energy, the Coachella Valley MSHCP, Western Riverside County MSHCP, and a multitude of environmental compliance issues and habitat projects.

David grew up working on his family cattle ranch and still makes his home in the Blythe area.

The Department of Water Resources' Kent Nelson

Kent, a relatively new member of the SCH Project Team, was recently assigned as DWR's Program Manager in charge of Salton Sea issues in August 2011. Kent has a long history with DWR working on complex environmental issues related to the management and restoration of the Sacramento-San Joaquin River Delta, endangered species protection in California's Central Valley, and flood control and agricultural protection along the State's vast floodway system.

Kent supervises DWR's Salton Sea Restoration Project office in Sacramento and coordinates closely with staff in DFG, federal, environmental, and stakeholder groups in the formulation and implementation of the Species Conservation Habitat program at the Salton Sea. Kent has a strong interest in finding common ground with the various stakeholder groups in the Salton Sea region and finding solutions to the Salton Sea's many challenges.

Kent is a graduate of UC Davis in Wildlife and Fisheries Biology. Between his university training and joining DWR, Kent gained diverse experience working for the US Forest Service at Lake Tahoe on habitat conservation and restoration programs; for the US Fish and Wildlife Service in Sacramento evaluating Army Corps of Engineers Section 404/10 permits; and for the San Francisco Public Utilities Commission supporting the environmental review process for the Hetch Hetchy water system improvement program. Kent has been with DWR for 19 years.

In 2008 Kent took a break from government service and joined forces with four friends to establish an ecologically-minded residential community in the coastal jungle of Costa Rica. This project enabled Kent to apply his professional planning and environmental conservation skills to a challenging project in a foreign country. After two and a half years in Costa Rica, Kent gained a whole new appreciation of project management….and learned a little Spanish along the way.

He looks forward to working through the many challenges that lay in the path to saving the Salton Sea.

The State of the Sea – A Salton Sea Status Report

Each publication of the Salton Sea Update newsletter will provide a brief State of the Sea report that will update readers with a brief overview of some very specific conditions and measurements in the Sea.

- **Salinity** – currently at 53 ppt
- **Water elevation** – dipped below -230 feet this winter
- **Bird disease** – very low levels
- **Bird numbers** – very high last few years (especially fish-eating birds) due to continuing abundance of tilapia
- **Fish die-offs** – smaller ones continue, but no large events by historic Salton Sea standards
- **Fishery** – no signs of marine species return; tilapia fishery remains very robust
- **Pileworm and barnacle populations** – severly reduced; barnacle bars and beaches not replenished as Sea recedes